REMARKS

The Office Action mailed August 14, 2002, has been carefully reviewed and considered. Claims 1-9 were pending in the present application. By way of this amendment and reply, claims 1-9 have been amended. No new matter has been introduced. Accordingly, claims 1-9 remain pending for consideration.

Applicant acknowledges with appreciation the indication in the Office Action that claims 5-8 contain allowable subject mater and would be in condition for allowance if rewritten in independent form. Accordingly, Applicant has amended claim 5 as suggested by the Examiner. Claim 6-8 depend therefrom. Therefore, at least claims 5-8 are in condition for allowance.

Also, claims 1-9 have been amended editorially to remove reference numerals and to improve readability. No new matter has been introduced.

In the Office Action, claims 1-4 and 9 were rejected under 35 U.S.C. § 102(b) as allegedly anticipated by Norton (U.S. Patent No. 5,917,594). For at least the reasons set forth herein, this rejection is overcome.

The Office Action asserts that Norton teaches a spectral ellipsometer having a "refractive illuminating optical system for an illuminating ray bundle ... for generating a measurement spot on a surface of a specimen" as recited in claim 1. Applicant respectfully disagrees; Norton's <u>mirror</u> 30 generates the measurement spot and not its lens doublet 22, 24. The illuminating ray bundle is reflected and only focused by the mirror 30, not by the lens doublet 22, 24 to which the Office Action appears to correspond to the refractive illuminating optical system of the claimed invention.

Since the mirror 30 is a spherical mirror and the ray bundle is reflected in an off-axis position of the mirror 30, spherical aberrations are caused (col. 6, lines 63-65). A negative meniscus lens (refractive element 24) is used to correct the spherical aberration of the mirror 30 (col. 6, lines 65-68; also: col. 3, lines 58-60; col. 4, lines 15-19, 31-33, 45-47; col. 5, lines 9-10, 27-29, col. 8, lines 11-13). However, lens 24 introduces chromatic aberration of its own (col. 8, lines 20-21; col. 7, lines 1-2). This is not desirable, since the mirror 30

has no chromatic aberration and is therefore used by Norton. Thus, lens 22 is introduced to compensate for chromatic aberration caused by lens 24 (col. 8, lines 20-22, col. 7, lines 1-5). The refractive elements 22 and 24 are only correction elements for the mirror 30 and have, therefore, zero or low optical power, not affecting the system performance (col. 8, lines 24-27; col. 7, lines 30-31).

In contrast, the system performance of the present application is not defined by a spherical mirror but is exclusively defined by a refractive optical system supplying the complete optical power for focussing the illuminating ray bundle. Such a refractive system has been color-corrected according to claim 1 and the optical design is quite different to that of lenses 22, 24 of Norton which only correct the spherical aberration of a spherical mirror and have therefore nearly zero optical power.

Norton describes solely the combination of a spherical mirror and at least two refractive elements (col. 3, lines 55-56; col. 4, lines 14-15, 38-39, 42-43; col. 5, lines 6-7, 24-25) to generate a small measurement spot, whereas the optical design of the present invention is a color-corrected refractive system without using an imaging mirror.

In sum, Norton does not disclose, teach or suggest a refractive illuminating optical system for generating a measurement spot on a surface of a specimen as recited in the claims of the present invention. In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of the rejection under 35 U.S.C. § 102(b).

Applicant further submits that the claims are now in condition for allowance and solicits early notification of the same. Should there be any questions or concerns regarding the present application, the Examiner is invited to contact Applicant's undersigned representative by telephone.

Respectfully submitted,

NOVEMBER 14, 2002
Date

Ankur D. Shah
Registration No. 41,514

FOLEY & LARDNER
Washington Harbour
3000 K Street, N.W., Suite 500
Washington, D.C. 20007-5143
Telephone: (202) 672-5300
Facsimile: (202) 672-5399

Should additional fees be necessary in connection with the filing of this paper, or if a petition for extension of time is required for timely acceptance of same, the Commissioner is hereby authorized to charge Deposit Account No. 19-0741 for any such fees; and applicant(s) hereby petition for any needed extension of time.

A

MARKED UP VERSION SHOWING CHANGES MADE

Below are the mark d up amended claims:

1. (Amended) A spectral ellipsometer [having] comprising: a refractive illuminating optical system [(3)] for an illuminating ray bundle [(2)], coming from an illumination unit [(1)], for generating a measurement spot [(6)] on a surface [(4)] of a specimen [(5)]; and [having] a detector unit [(8)] that receives and detects, as a measured ray bundle [(7)], the light reflected from the surface [(4)] at the location of the measurement spot [(6)], wherein the illuminating optical system [(3)] is color-corrected.

2. (Amended) The spectral ellipsometer as defined in Claim 1, wherein the color-corrected illuminating optical system [(3)] is a lens doublet or a lens triplet.

3. (Amended) The spectral ellipsometer as defined in Claim 1, wherein the color-corrected illuminating optical system [(3)] is made of glass having at least one of high transmission in the UV range and [and/or has] an anti-reflection coating.

4. (Amended) The spectral ellipsometer as defined in Claim 1, wherein the color-corrected illuminating optical system [(3)] is constructed from individual refractive optical elements that are joined with a cement having high transmission in the UV range.

5. (Amended) A [The] spectral ellipsometer [as defined in Claim 1] comprising: a refractive illuminating optical system for an illuminating ray bundle, coming from an illumination unit, for generating a measurement spot on a surface of a specimen; and a detector unit that receives and detects, as a measured ray bundle, the light reflected from the surface at the location of the measurement spot, wherein the illuminating optical system is color-corrected, and wherein a receiving optical system [(9a)] that is color-corrected is provided for the measured ray bundle [(7)].

6. (Amended) The spectral ellipsometer as defined in Claim 5, wherein the color-corrected receiving optical system [(9a)] is a lens doublet or a lens triplet.

7. (Amended) The spectral ellipsometer as defined in Claim 5, wherein the color-corrected receiving optical system [(9a)] is made of glass having at least one of high transmission in the UV range and [and/or has] an anti-reflection coating.

8. (Amended) The spectral ellipsometer as defined in Claim 5, wherein the color-corrected receiving optical system [(9a)] is constructed from individual refractive optical elements that are joined with a cement having high transmission in the UV range.

9. (Amended) The spectral ellipsometer as defined in Claim 1, characterized in that it is used to measure material parameters of thin layers applied onto the specimen surface [(4)].